Assured Access to the Maritime Battlespace

Warfighting Requirements

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CNO's Direction

CNO's Tenets

- Warfighting First
- Operate Forward
- Be Ready

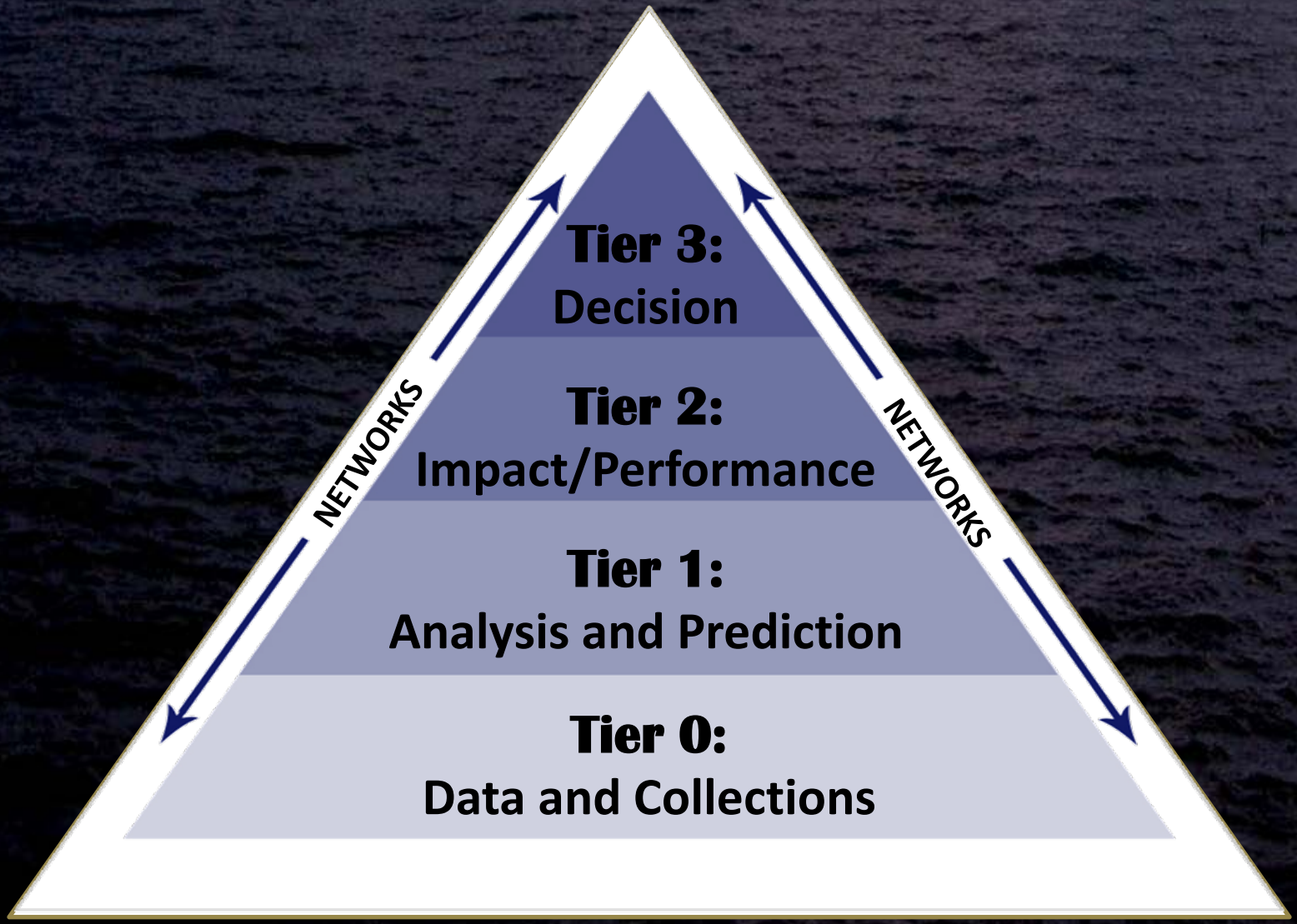
CNO → SSG XXXII:

- **Develop concepts for Navy to maintain its undersea superiority through 2030.**
- **To keep our undersea advantage, we need a combination of new operating concepts, innovative technology, and the continued proficiency and confidence of our Sailors.**

Air – Sea Battle

Information Dominance Warfare

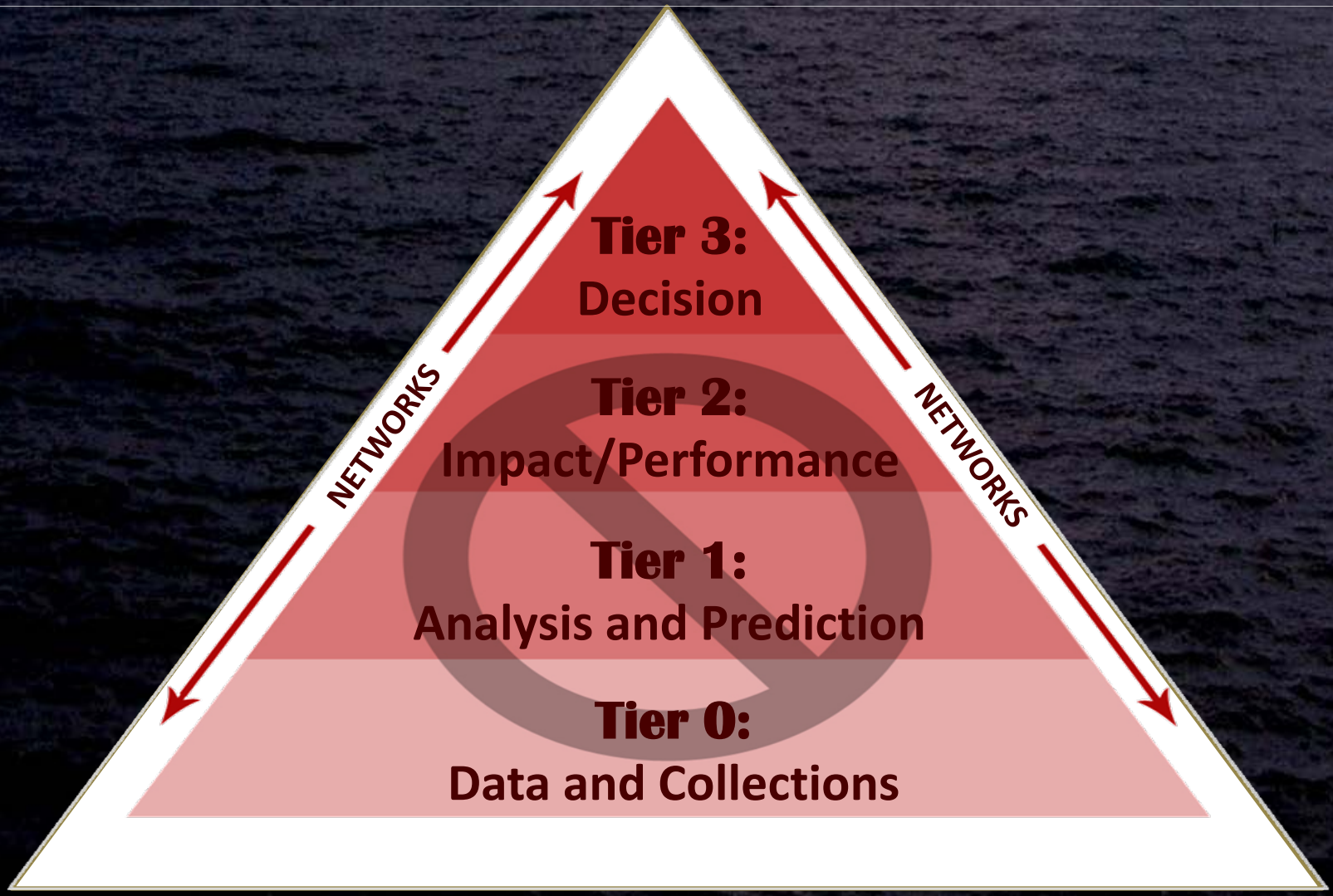
Achieving Decision Superiority



Decision Superiority: Making better decisions faster than the adversary

Information Dominance Warfare

Achieving Decision Superiority



Decision Superiority: Making better decisions faster than the adversary

Battlespace On Demand
Linking Data to Decisions

Decision Superiority: Making better decisions faster than the adversary

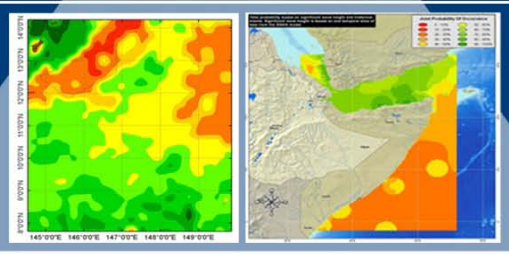
Decision

Options
Courses of Action
Sensor Employment

Asset Allocation
Timing
Quantified Risk

3

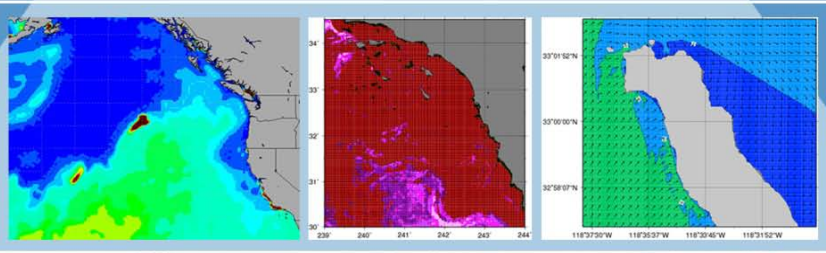
Performance



How the predicted environment affects the Fleet and Joint Forces

2

Environment



The predicted environment

1

Data

Observations, measurements, satellites, gliders, buoys, etc.

0

INITIAL AND BOUNDARY CONDITIONS

Battlespace On Demand
Linking Data to Decisions

Decision Superiority: Making better decisions faster than the adversary

Decision — Options, Courses of Action, Asset Allocation, Timing — 3

Performance — 2

Environment — The predicted environment — 1

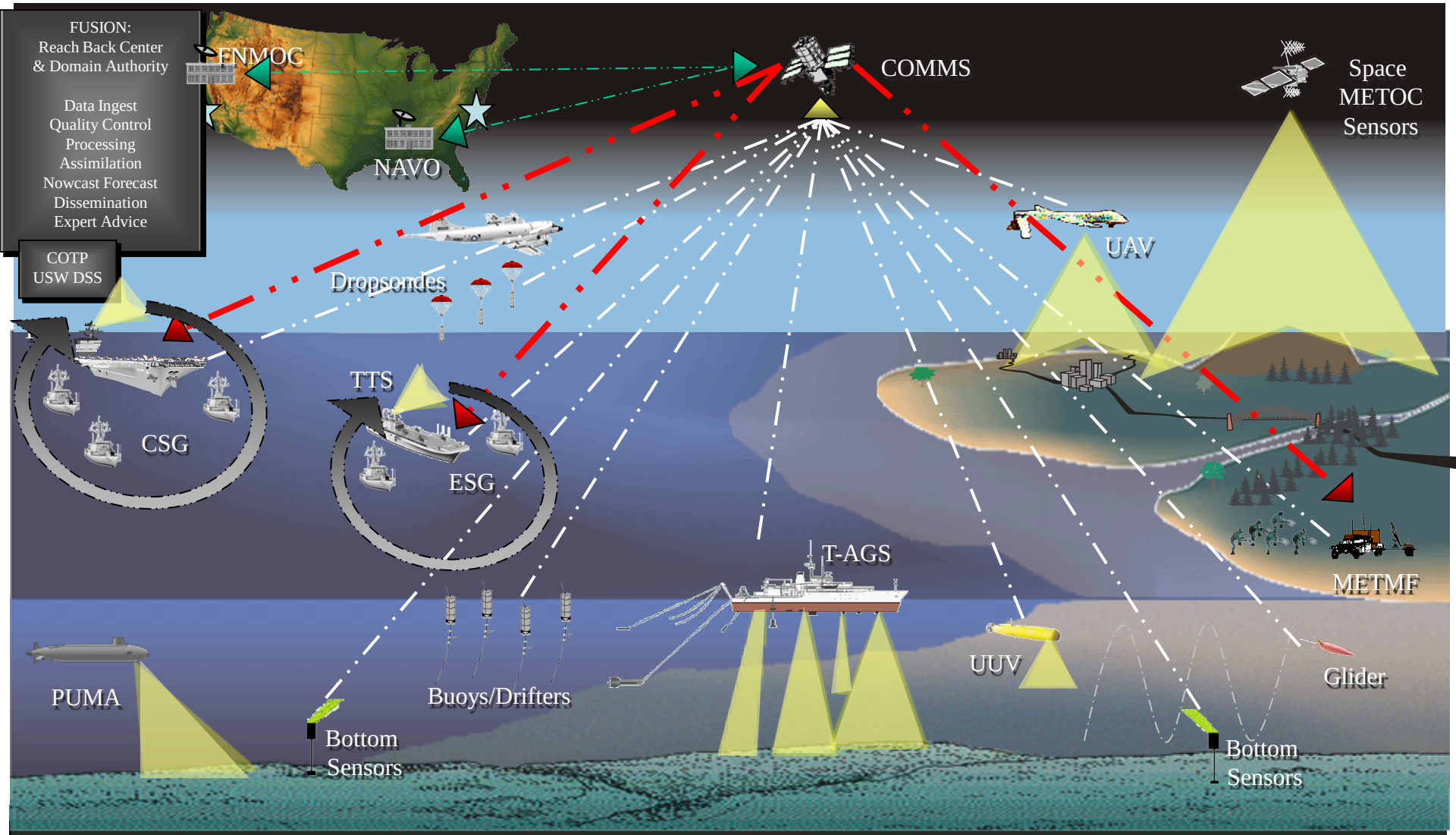
Data — Observations, measurements, satellites, gliders, buoys, etc. — 0

INITIAL AND BOUNDARY CONDITIONS

Home Field Advantage ... at the Away Games

Future Operational View

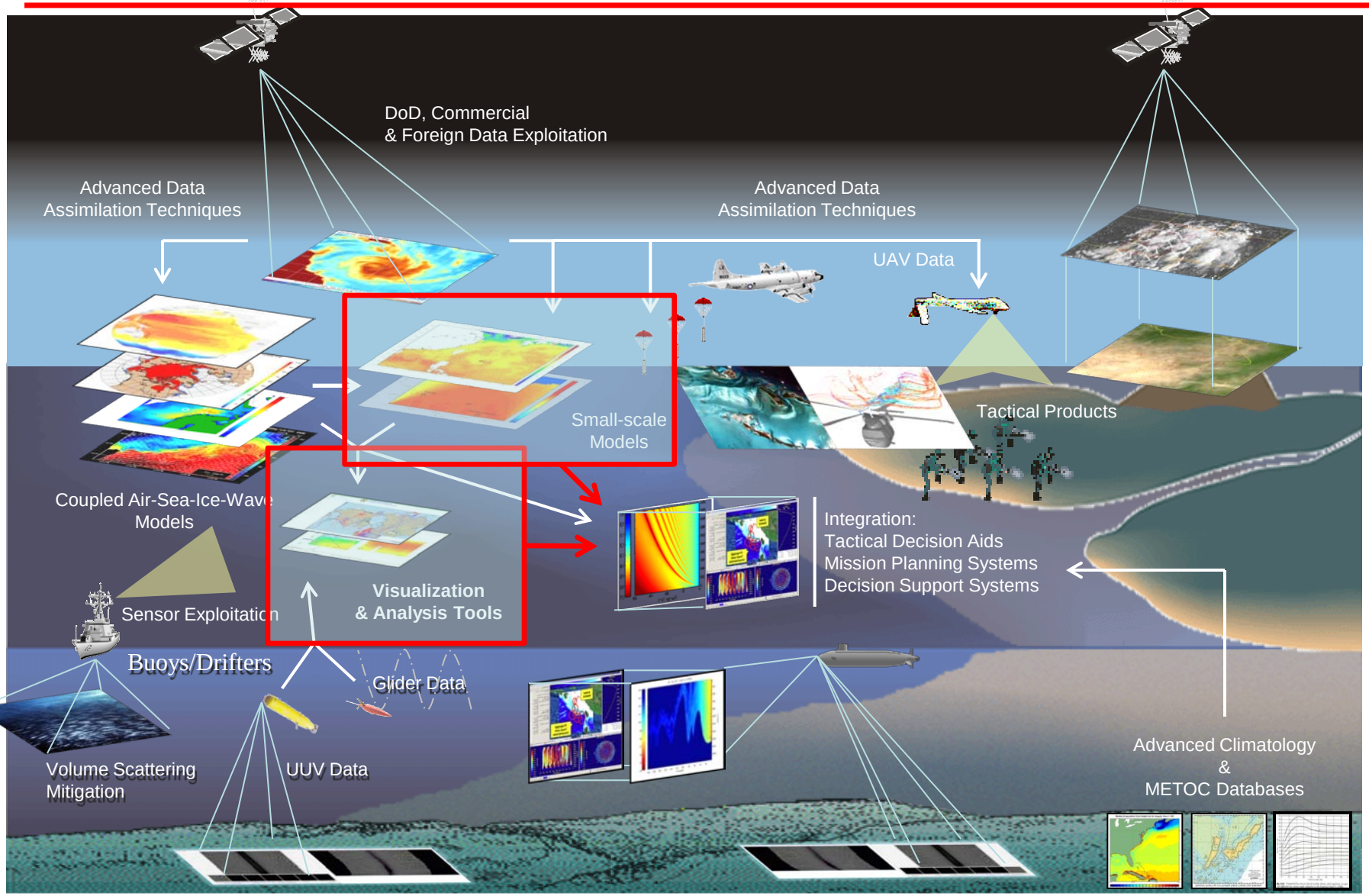
Battlespace Sensing Fusion & Integration



REA = Rapid Environmental Assessment
M2M = Machine to Machine
TDA = Tactical Decision Aid

SPP = Sensor Performance Prediction
COTP = Common Operational Tactical Picture
USWDSS – Undersea Warfare Decision Support System

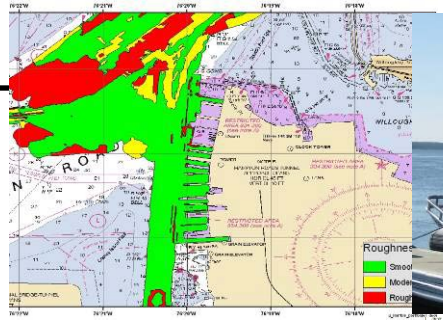
All Source Data Fusion & Visualization … In a "competitive" environment

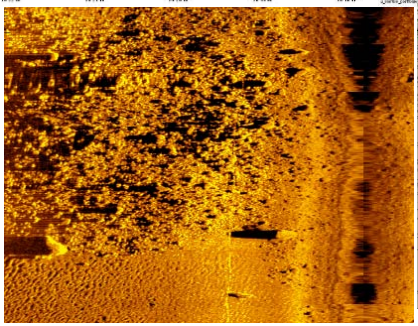


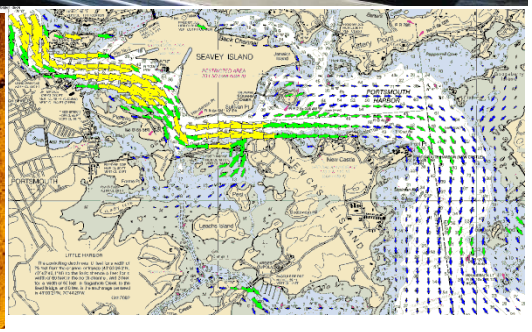
Mine Warfare: An IDW Example

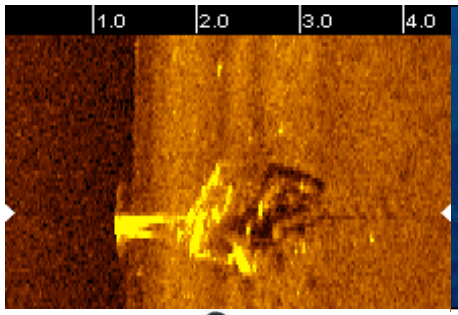
Port & Harbor Surveys

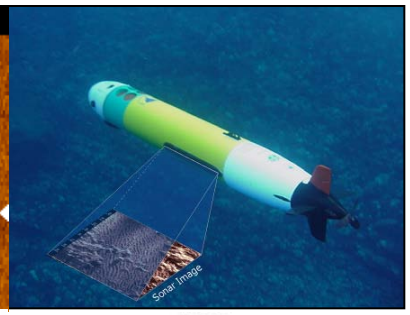
- Continuous Intelligence Preparation of the Environment
  - Baseline high resolution side scan sonar surveys
  - Near shore current modeling
  - Optical properties
- Port Folders: key infrastructure, survey and oceanographic data, MCM plans

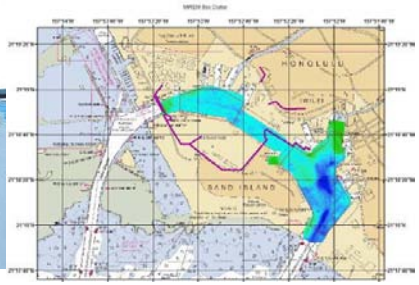










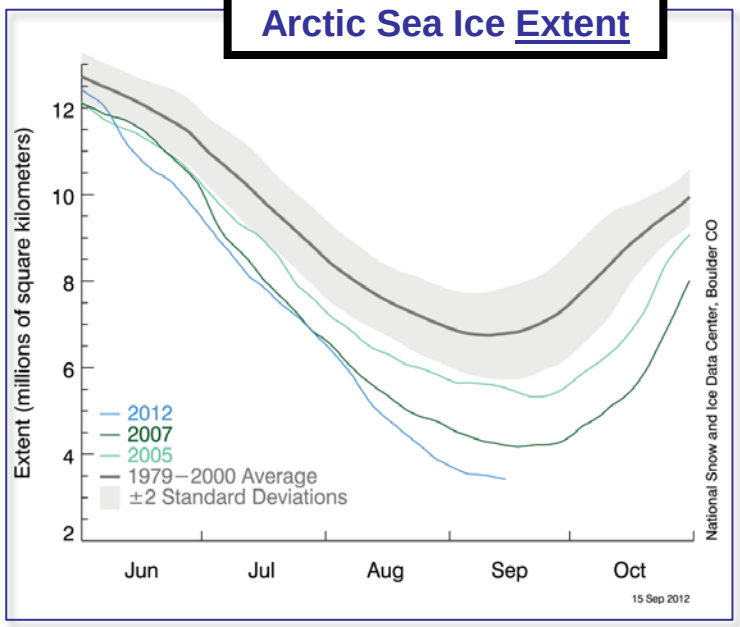


Operational Response Capability

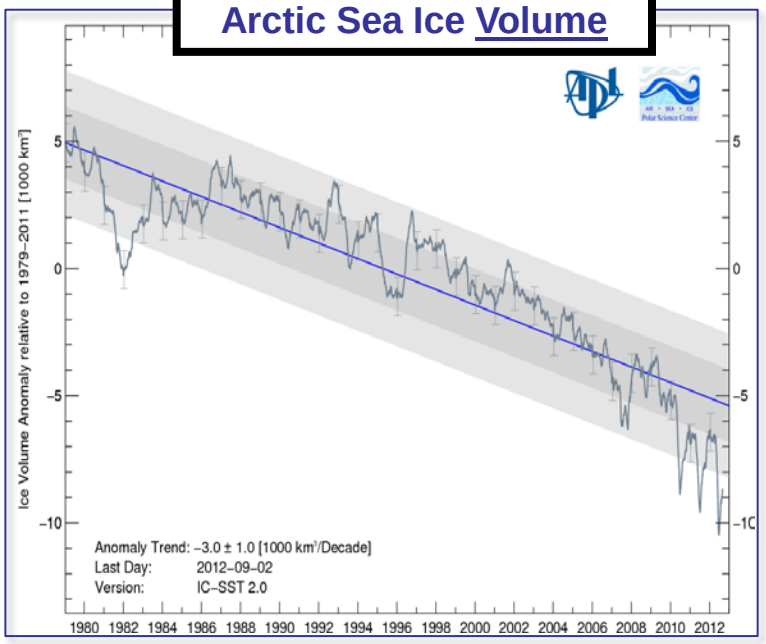
- UUV Platoon
  - Rapid responder/force multiplier
  - Developing tactics and procedures in complex confined areas
- Data Fusion Cell
  - Provides on-scene tactical support

Changing Climate and Arctic

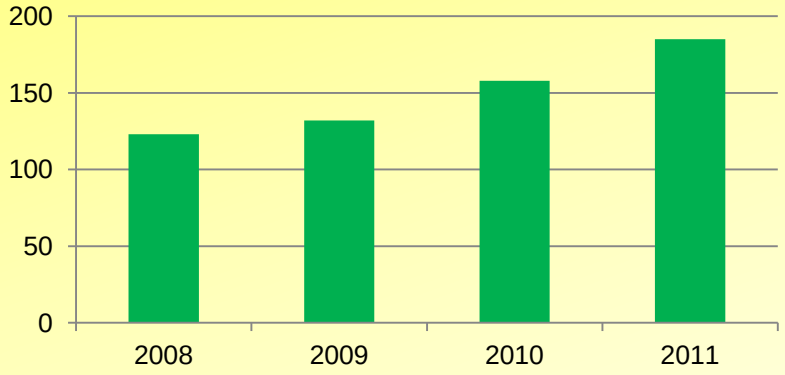
Arctic Sea Ice Extent



Arctic Sea Ice Volume

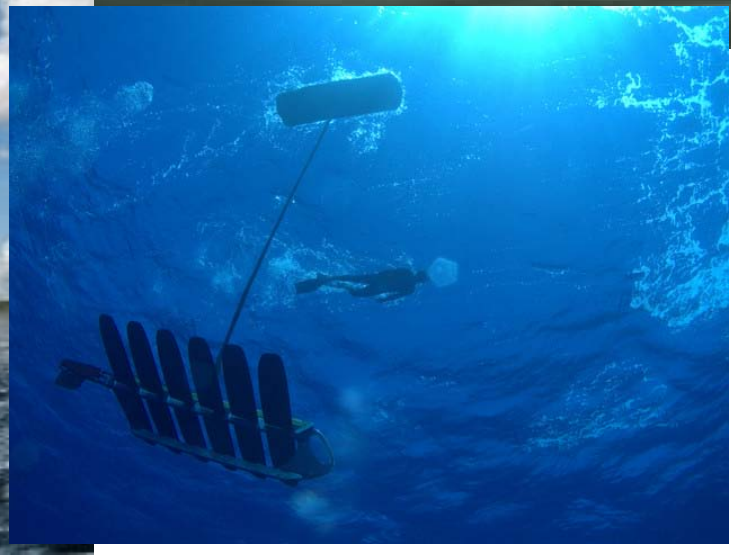


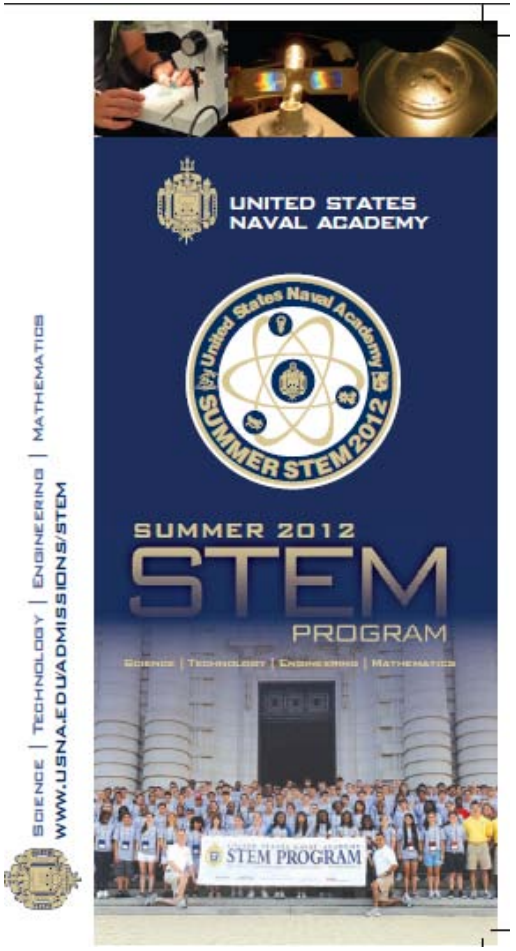
North Bering Strait Activity



U.S. Navy

A tradition of Science and Technology Excellence





Assured Access to the Maritime Battlespace

The Warfighting Requirements?

- Information Dominance
- Sensor superiority
- Assimilation, Modeling, and Exploitation superiority
- Assured cross-domain PNT
- Cross-domain C4I
- Allied cooperation
- Automation → end-to-end


OCEANOGRAPHER
OF THE NAVY